

Examiner Douglas Mc Ginty  
 Art Unit 1796  
 USPTO  
 Fax: 571-273-1029

Re: **Applicants' Explanation**

U.S. Patent Application No.: 10/593,498

Inventor: Yoshihiro SAIDA, et al.

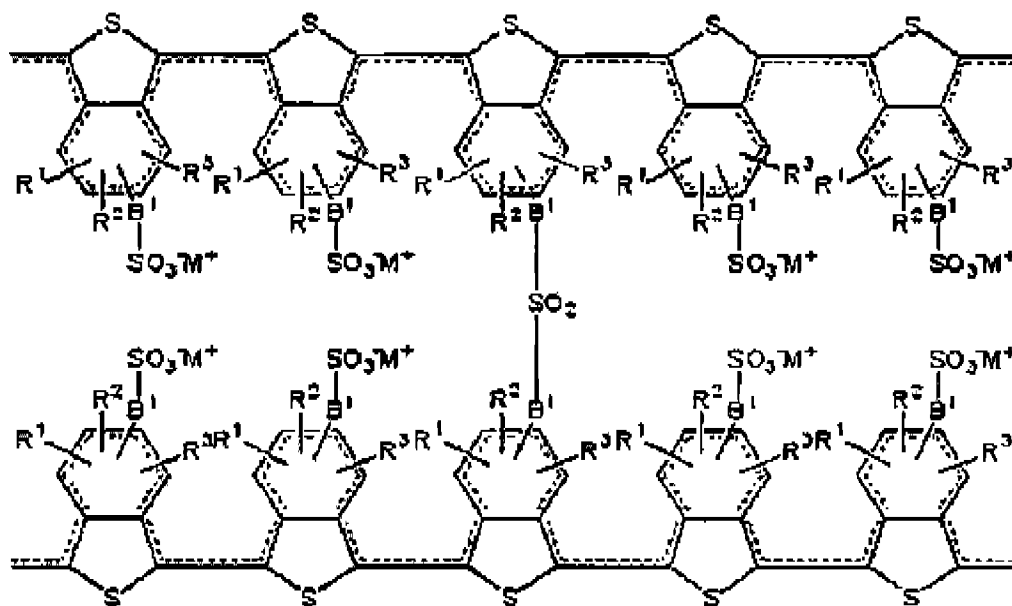
Assignee: SHOWA DENKO K.K.

Our Ref: Q83507

Dear Examiner Mc Ginty:

The following is an explanation as to why Applicants do not agree with the addition of "wherein at least one of  $R^x$  to  $R^x$  is a  $-B^1-SO_3^+M^+$  group" at the end of claims 6, 7, 14 and 22, which is for discussion purposes only.

Formulae (1) and (2) do not represent a repeating unit but a crosslinked portion only. The basic polymer structure is a polyisothianaphthene structure. The polymer of the present invention forms a crosslinked structure by partial bonding between sulfonate groups to each other by dehydration-condensation. An example of the polymer of the present invention is schematically shown below to help your understanding:



Please note that the above structure shows only one example of the polymer of the present invention.

As is clear from the above structure, although the isothianaphthene skeleton before crosslinking has a sulfonic acid group, two sulfonic acid groups are condensed to give a sulfone bond in the portion where a crosslinked structure is formed (see the center portion of the structure). A sulfonic acid group is present in the portion where a crosslinked structure is not

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formed (see the portions other than the center). Should a  $-B^1-SO_3^-M^+$  group be present in formulae (1) and (2) as in the Examiner's proposed amendments, at least two sulfone bonds would be essential in a benzene ring in formula (7) which shows a structure before a crosslinked structure is formed, which Applicants do not intend.

Therefore, "the polymer contains an isothianaphthene skeleton (=unit) having a sulfonic acid group" in claim 1 also means that the polymer may contain an isothianaphthene skeleton (=unit) not having a sulfonic acid group (i.e., where a crosslinked structure is formed).

Hui C. Wauters

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